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| 14. ABSTRACT<br>Abstract<br>OBJECTIVE:<br>Decompressive craniectomy has defined this era of damage-control wartime neurosurgery. Injuries that in previous conflicts were treated in an expectant manner are now aggressively decompressed at the far-forward Combat Support Hospital and transferred to Walter Reed Army Medical Center (WRAMC) and National Naval Medical   |                   |                            |                                  |  |  |
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## **Report Title**

Early decompressive craniectomy for severe penetrating and closed head injury during wartime.

### **ABSTRACT**

#### **Abstract**

##### **OBJECTIVE:**

Decompressive craniectomy has defined this era of damage-control wartime neurosurgery. Injuries that in previous conflicts were treated in an expectant manner are now aggressively decompressed at the far-forward Combat Support Hospital and transferred to Walter Reed Army Medical Center (WRAMC) and National Naval Medical Center (NNMC) in Bethesda for definitive care. The purpose of this paper is to examine the baseline characteristics of those injured warriors who received decompressive craniectomies. The importance of this procedure will be emphasized and guidance provided to current and future neurosurgeons deployed in theater.

##### **METHODS:**

The authors retrospectively searched a database for all soldiers injured in Operations Iraqi Freedom and Enduring Freedom between April 2003 and October 2008 at WRAMC and NNMC. Criteria for inclusion in this study included either a closed or penetrating head injury suffered during combat operations in either Iraq or Afghanistan with subsequent neurosurgical evaluation at NNMC or WRAMC. Exclusion criteria included all cases in which primary demographic data could not be verified. Primary outcome data included the type and mechanism of injury, Glasgow Coma Scale (GCS) score and injury severity score (ISS) at admission, and Glasgow Outcome Scale (GOS) score at discharge, 6 months, and 1-2 years.

##### **RESULTS:**

Four hundred eight patients presented with head injury during the study period. In this population, a total of 188 decompressive craniectomies were performed (154 for penetrating head injury, 22 for closed head injury, and 12 for unknown injury mechanism). Patients who underwent decompressive craniectomies in the combat theater had significantly lower initial GCS scores ( $7.7 \pm 4.2$  vs  $10.8 \pm 4.0$ ,  $p < 0.05$ ) and higher ISSs ( $32.5 \pm 9.4$  vs  $26.8 \pm 11.8$ ,  $p < 0.05$ ) than those who did not. When comparing the GOS scores at hospital discharge, 6 months, and 1-2 years after discharge, those receiving decompressive craniectomies had significantly lower scores ( $3.0 \pm 0.9$  vs  $3.7 \pm 0.9$ ,  $3.5 \pm 1.2$  vs  $4.0 \pm 1.0$ , and  $3.7 \pm 1.2$  vs  $4.4 \pm 0.9$ , respectively) than those who did not undergo decompressive craniectomies. That said, intragroup analysis indicated consistent improvement for those with craniectomy with time, allowing them, on average, to participate in and improve from rehabilitation ( $p < 0.05$ ). Overall, 83% of those for whom follow-up data are available achieved a 1-year GOS score of greater than 3.

##### **CONCLUSIONS:**

This study of the provision of early decompressive craniectomy in a military population that sustained severe penetrating and closed head injuries represents one of the largest to date in both the civilian and military literature. The findings suggest that patients who undergo decompressive craniectomy had worse injuries than those receiving craniotomy and, while not achieving the same outcomes as those with a lesser injury, did improve with time. The authors recommend hemicraniectomy for damage control to protect patients from the effects of brain swelling during the long overseas transport to their definitive care, and it should be conducted with foresight concerning future complications and reconstructive surgical procedures.



[Neurosurg Focus](#). 2010 May;28(5):E1.

## **Early decompressive craniectomy for severe penetrating and closed head injury during wartime.**

[Bell RS](#), [Mossop CM](#), [Dirks MS](#), [Stephens FL](#), [Mulligan L](#), [Ecker R](#), [Neal CJ](#), [Kumar A](#), [Tigno T](#), [Armonda RA](#).

### **Source**

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